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ABSTRACT

The purpose of this paper is to synthesize and summarize the basic conclusions of literature concerning the effects of day care on infants and young children. The first section of the document briefly indicates limitations of day care research. The second section offers research-based generalizations concerning the effects of day care on intellectual, emotional, social, and physical development (including health and safety). The third section focuses on comparisons between center and family day care; research reviewed indicates that the most critical day care variable is program quality. The fourth section reviews findings of research related to components of quality day care, such as group size, child/staff ratio, caregiver qualifications, caregiver continuity, curriculum, physical environment, and parent involvement. The fifth section points out implications of findings for caregivers, administrators, parents, social policy, legislation, and researchers. A table summarizes and comments on 16 studies comparing effects and characteristics of center day care and family day care. In addition, recommendations for controlling communicable diseases in day care facilities are appended. (RH)

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As The Twig Is Bent: A Review of Research on The Consequences of Day Care With Implications For Caregiving

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The utilization of nonparental care for infants and young children has risen dramatically in recent years and is likely to continue in the future. By 1990, almost half of all mothers of children under six will be working (22). The continuing rise in maternal employment translates into increases in the utilization of substitute care. Hofferth (30) predicts that 1980 - 1990 is likely to be a decade of heightened concern about the daytime care of children.

Purpose

Questions and concerns about possible negative effects of nonparental child care on infants and young children have generated a considerable amount of research since the pioneering efforts of Caldwell, et al (11) were published in 1970. Much of the research literature on the effects of day care has been well reviewed in several papers and books published between 1976 and 1983 (1, 4, 5, 6, 8, 9, 10, 14, 19, 28, 35, 38, 44, 47, 56, 59). The purpose of this paper is to synthesize and summarize the basic conclusion contained in the various reviews. Some of the literature overlooked and neglected by the reviewers will also be summarized. In particular, research studies on the effects of day care on physical development, the factors associated with quality day care, and family day care as compared with center day care will be added to that covered in the reviews. Finally, the implications of research findings for caregivers, administrators, parents, researchers and legislators will be explored.

Limitations of Day Care Research

In spite of the numerous empirical studies, the reviewers tend to agree that we do not have adequate information about the effects of various forms of day care on young children. The deficits in our present understanding have been attributed to the following limitations and qualifying features of research findings:

1. Research studies conducted in the 1970's were largely limited to high quality, "model" day care centers and are not generalizable to the lower quality "modal" day care available to the general population. Fortunately, a second wave of research studies (e. g. 13, 20, 41) is emerging which has used "average" day care as the independent variable.

2. Research has been restricted to immediate consequences with little attention to the long term effects of day care.

3. Many studies are of questionable validity because of methodological problems in the experimental design.

4. The laboratory experiments and psychological tests typically used to measure the effects of day care may not be representative of the actual behavior of children in real life settings.

Effects of Day Care

One of the most striking features of the research literature on the effects of day care is the consistency of the results of a number of the studies. Methodological problems and research limitations notwithstanding, the various reviewers have found sufficient weight and consistency in the results to make the following generalizations.

Intellectual Development

Good quality day care has no obvious harmful or beneficial effect on the cognitive development of middle class infants and children as measured by standardized tests. In the case of high risk infants, day care apparently offsets some of the decline in test scores typically observed after the age of two. Research evidence does not generally support the claim that day care boosts intelligence scores.

Emotional Development

For the most part, research on the effects of day care on emotional development have been limited to the child's attachment to the mother. With a few exceptions, the studies have found that infants who participate in good day care do not typically suffer loss of attachment to their mothers or become overtly anxious and insecure. There is no evidence that day care children adopt a preference for substitute caregivers over their parents.

In one of the notable exceptions, Farber and Edgeland (20) found that young infants of economically disadvantaged single mothers who experienced low quality, inconsistent care had problems in becoming securely attached to their mother. These findings are consistent with other reports (20, 43). It thus appears that family status and consistency of care need to be considered along with the quality of care as important qualifying variables in predicting the effects of day care on attachment behavior.

Social Development

The results of studies on social development have produced a mixed picture. While some studies have found no differences between home reared and day care subjects, others suggest that day care can have both positive and negative effects on socialization. On the negative side, children enrolled in day care may eventually display more aggressive and negative interactions with peers and adults, and exhibit less compliance with adult wishes than children who do not participate in day care (21, 41, 45, 64, 65). On the positive side, day care children have been found to exhibit more social confidence and skills in interacting with peers and adults (25, 28, 58).

In exploring the divergent findings from the various studies of the effects of day care some researchers have suggested that the effects of

day care are program specific. That is, different programs produce different results. A study by McCrae and Herbert-Jackson (41) has been widely cited as support for the program-specific explanation. Other researchers (34, 55) have suggested that social development may be more a function of age than child care experiences.

Physical Development

Through the years relatively little research on the effects of day care on physical development, including health, nutrition and safety has been conducted. With the exception of Clarke-Stewart (14), Heist (28) and Kilmer (38), the reviewers have not commented on literature on physical development. More recently, however, research efforts in this area, particularly the health and safety aspects of day care, have expanded and merit increased attention.

Growth. Heist (28) and Kilmer (38) conclude that no differences in height and weight have been found for group-care versus home-care children. Another reviewer, Clarke-Stewart (14), found evidence that for children from poor families, day care (in either university or community facilities) contributes to beneficial increases in height and weight. Growth increments of children from middle-class families apparently are not affected by day care. However, additional studies are needed before firm conclusions can be drawn.

Nutrition. Little evidence on the nutrition which children receive in day care and its effect upon growth and development has been reported. The New York City Infant Day Care Study (25) found the nutrition which children received in day care centers to be superior to nutrition provided in family day care homes. The differences were not found to be related to growth rates. Comparisons between nutrition provided children in day care and children not in day care were not made. Gillis and Sabry (24) found that child care teachers which they surveyed had little knowledge of nutrition.

Health. Although the effects of day care on children's health has been a concern for many years, it has only been within the last decade that the issue has received noteworthy attention by the scientific community. Kendall (36) reviewed 23 recently published research studies on the incidence of communicable disease in day care facilities along with 36 other documents pertaining to health issues in day care. Trump and Karasic (69) referred to 11 additional studies in their article on the management of communicable diseases in day care centers. The widely quoted editorial on day care associated infections which recently appeared in a leading medical journal (63) is also indicative of the increasing interest in day care by the medical community.

Respiratory infections. The incidence of respiratory infections, such as colds and flu, as well as non-specific febrile illness, is evidently more common among children attending day care centers and family day homes than children of similar ages who do not participate in day care (14, 28, 35, 38, 68, 69). The studies on the incidence of illness in day care are not consistent (e. g. 40), but the weight of the evidence supports this conclusion.

Influenzae Type-B. Children in child care and their adult contacts also appear to be in the high risk group for contacting Heamophilus Influenzae Type B (H-Flu) (36). H-Flu is a disease of special concern because it may result in secondary infections such as otitis media (middle-ear infections) and one type of meningitis. The risk of developing secondary diseases from H-Flu is greatest for infants under two years of age (36).

Hepatitis A. Studies have shown that a relatively high incidence of Viral A Hepatitis originates in day care facilities which care for children under three years of age (36, 69). The incidence of day care related hepatitis is also apparently higher in large centers (above 50), centers open more than 15 hours each day, and centers operated for profit (36). Unlike adults, infants and young children display few if any symptoms of hepatitis. Consequently, epidemics may be unrecognized until symptoms appear in adult contacts.

Diarrhea. One of the most common and persistent health problems associated with day care is diarrhea. Children in child care have about twice as many cases of diarrhea as children cared for in their own homes (36). The incidence of diarrheal illness is highest in children less than two years of age. The problem is compounded by the spread of the disease from day care facilities to the families of the children and caretakers (69). The transmission of both diarrhea and hepatitis is related to the breakdown of sanitary practices (7, 57).

Safety. In addition to health concerns, safety practices in child care facilities is an area which is receiving increased attention by researchers (e. g. 2). Aronson and Pizzo (3) summarized the research literature on health and safety practices in child care facilities as part of a 1976 congressionally mandated review of the appropriateness of the Federal Interagency Day Care Requirements. On the basis of a review of nine studies on health and safety practices in day care, they concluded that, "In the areas of emergency preparedness, accident prevention, fire and burn prevention, detection of lead paint, sanitation, and health care, day care centers are woefully inadequate (p. 4)". However, data is not yet available to assess the risk of accidents for day care children relative to that of home care.

Comparisons Between Center and Family Day Care

It is ironic that most of the research on the effects of day care has been conducted in center day care settings, while family day care represents the most prevalent mode of care for the families who use child care services (22, 30). Researchers are now beginning to make comparisons between family day care and center day care. In addition, a major study of 303 family day care homes in the United States was completed in 1981. The study, sponsored by the United States Department of Health and Human Services, describes the nature and characteristics of family day care in many different settings, among different types of people, and for children of different ages.

A total of 16 studies comparing family day care (FDC) and center day care (CDC) were identified in reviewing the literature for this report. Ten of the studies compared the effects of two or more types of care on the participants, including FDC and CDC care. Two of the studies deal exclusively with ecological comparisons, while three additional studies compare both effects and ecological characteristics. One study dealt exclusively with the effects of different types of care on parents. A summary of the studies is presented in Table 1.

Effects. Eight of the studies comparing the effects of FDC and CDC failed to identify any significant differences on a collective variety of measures of social, cognitive, and emotional development as well as the spread of infectious disease. One study (61) produced results favoring CDC on measures of cognitive, motor and social development. Another study (42) found FDC subjects to be superior on measures of emotional adjustment. While both studies have methodological weaknesses, it is significant to note that the subjects with the lowest scores were the ones exposed to discontinuity of caregiving arrangements. This trend is consistent with other studies (e. g. 20, 43).

In two additional studies (25, 31), significant differences were found, but the similarities of behaviors in the two groups (FDC & CDC) exceeded the differences. One of the two studies (31) found that FDC subjects scored higher in verbal behavior, while the other study (25) found that CDC children scored higher on intellectual performance at 36 months. The results of the study on the effects of the various types of care on parents found that, in general, using CDC appears to have the most positive effects.

Ecological Comparisons. The results of the five studies which compared the quality of the physical and human environments available in the two types of care, revealed a mixed picture. FDC was viewed as offering more opportunity for one to one caregiver contact, smaller group size, privacy, contact with mixed age peers and a softer, more "homelike" environment. On the other hand, FDC caregivers tended to be more restrictive and negative. CDC programs apparently offer the advantage of more space and a greater variety of child size equipment, play materials and a more clearly identifiable curriculum.

An important consideration in comparing FDC and CDC is quality differences within as well as between the two types of care. Variations within each type of care can be as great as variations among the two types of care (6). The National Day Care Home Study (22) found that regulation (licensing), sponsorship and supervision are factors which are associated with quality control in FDC. While the level of care in all of the homes studied was generally satisfactory, the quality of care was superior in officially sponsored homes than in registered (licensed) or unregistered homes.

Conclusions: On the basis of the studies currently available, it is not possible to make a case for the superiority of either type of care insofar as developmental effects are concerned. There is no evidence that FDC and CDC consistently produce different outcomes for infants or preschool age children.

TABLE 1. COMPARATIVE EFFECTS AND CHARACTERISTICS OF CENTER DAY CARE AND FAMILY DAY CARE

AUTHOR & DATE	SUBJECTS	DEPENDENT VARIABLES	SUMMARY: FINDINGS AND CONCLUSIONS	COMMENTS
1. Saunders & Keister (1972)	22 Total - (Infants tested at 3 mos. and subsequent intervals to 3 years) 12 Family day care (FDC) 10 Center day care (CDC)	Cognitive, social and motor development	A large percentage of infants in FDC showed losses over a two year period in mental development (33%), motor development (42%), and social development (50%). In contrast, a large percentage of CDC infants attained increases in mental, social and motor development scores.	No tests of statistical significance between groups reported. Social class was not controlled. FDC infants experienced notable discontinuity of care.
2. Lippman & Grote (1974)	198 One to 4 year olds in FDC, CDC and no day care (NDC)	Social, emotional characteristics	FDC, CDC, & NDC children did not differ in cooperativeness, reaction to stress and sex role typing.	
3. Strangert (1976)	207 Total - (6 mos. - 2 yrs.) 108 CDC 42 FDC 57 NDC	Respiratory illness	No difference between FDC and CDC infants on incidence of respiratory infections. Both day care groups had more illnesses than the NDC group.	Study conducted in Sweden.
4. Cochran (1977)	120 Total - (12 - 18 mos.) 60 CDC 26 FDC 34 NDC	Caregiver-child interactions Intellectual development Reaction to Separation	No differences between CDC & FDC on mental development or reactions of infants to maternal separation. NDC & FDC subjects explored surroundings more, interacted more frequently with caretakers in cognitive-verbal situations, and were carried more frequently. Play experiences were more frequent in CDC group.	Report on Phase I of a longitudinal study conducted in Sweden. (See Gunnarson for report on Phase II.)
5. Winett, et al (1977)	124 Total - (3 - 5½ yrs.) 35 CDC 15 FDC 43 NDC 31 Mixed (FDC/CDC)	Intellectual, language, & social development	FDC & CDC children did not differ significantly on any of the variables. The mixed care group scored higher on intellectual ability. Quality of care ratings for centers were not related to children's scores.	Authors note that differences may possibly be due to higher SES of mixed group. Day care facilities were reported to be comparable to those found in many communities. Quality ratings for day care homes were not reported.

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6. Clarke-Stewart (1979, 1980, 1982)	152 Total - (2 - 4 yrs.) in groups of: CDC, FDC, nursery schools (part-time), NDC, mixed (sitter/CDC)	Language skills, manipulative abilities, perceptual abilities	Subjects exposed to any type of center care scored higher on language, manipulative and perceptual abilities than home care with sitter, FDC or NDC.	Day care facilities were reported to be of "average" quality
		Mother-child attachment	Full time CDC infants displayed more aloofness and emotional detachment from mothers than infants exposed to other types of care.	Results may be attributed to "Transient Distress Syndrome" (See reference nos. 6 & 48) since infants had been in care less than six months. But investigator attributes results mainly to experience at home.
		Social competence and cooperation	Nursery school group scored higher on social competence than FDC infants who scored higher than CDC and NDC infants. FDC subjects scored lower on cooperation and prosocial behavior with adults than CDC and other care groups.	
7. Doyle & Somers (1978)	39 Total - (Av. age = 22 mos.) 14 CDC 11 FDC 14 NDC	Mother-child attachment Intellectual and language development	No differences between CDC and FDC infants on attachment behavior. Both day care groups were less upset than home reared subjects by mother child separation. No differences between groups on measures of intellectual and language development.	Study conducted in day care facilities in rural Nova Scotia. Social class and other variables were controlled. Staff-child ratios indicate good quality care, but FDC was higher (1:2.3) than CDC (1:4 for younger children and 1:7 for older children)

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8. Golden, et al (1978)	Longitudinal sample: Beginning total = 437 infants from day care centers and family day care homes. Sample size varied overtime. Effects were examined at 18 mos. and 36 mos. of age. 18 month sample = 107 CDC 142 FDC 69 NDC 36 month sample = 87 CDC 94 FDC 78 NDC	Child measures: Intelligence, language, social competence, emotional functioning, cognitive style, physical growth and health Family measures: Impact of day care on families Children's daily experiences: Health care Safety Nutrition Materials, equipment Play space caregiver behavior	CDC and FDC infants did not differ on cognitive, language, social and emotional ratings at 18 and 36 months, except at 36 months the CDC subjects scored higher on an IQ test than FDC and NDC subjects. CDC and FDC children did not differ on health or physical growth, but FDC subjects tended to be healthier and larger than NDC subjects at 36 months. No difference between CDC and FDC in impact of day care on families. FDC children received more individual attention than CDC subjects, but no differences in quality of caregiver behavior between groups. CDC programs were rated superior to FDC on immunizations of children, nutrition provided, play materials, equipment and space. FDC facilities had more indoor safety hazards, but no differences in safety practices by caregivers.	Day care centers were community based, publicly supported programs. Family day care homes were licensed but not as closely monitored. Centers had more resources, support and supervision. Control subjects (NDC) were cross-sectional groups of children who were identified as they entered day care facilities. CDC and FDC were assessed prospectively while NDC were assessed retrospectively.
9. Gunnarson (1978)	101 Total - (5½ yrs.) 33 CDC 34 Home (FDC, NDC & part-time play group) 34 Mixed (both home & center)	Social interaction patterns Mental development: Locomotor Personal-social Hearing & speech Eye hand coordination Performance and practical reasoning	No differences between groups on any variables Neither homes (including FDC) or centers were established as superior or inferior in promoting the overall development of children. Sex differences were more pronounced than differences between child care environments. Findings were not qualified by family structure.	Phase II of a longitudinal study conducted in Sweden (See Cochran). FDC subjects were apparently grouped with other home care subjects for comparison with CDC groups thus confounding the results.

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10. Bowes & Rubenstein (1978a, 1978b)	40 Total - (18 - 22 mos.) 20 CDC 20 FDC	Peer social behavior and interactions Social interactions (competency) with caregivers: conversation, sharing, proximity seeking, positive affect, negative affect, conformity to rules. Ecological comparisons: Caregiver social behavior directed to toddlers Caregiver characteristics: training, non-caregiving activities Group size, staff/child ratio	No significant differences in frequency or complexity of peer play interactions. Both toddler talk to peers and peer talk to toddler was significantly higher in FDC. Only one significant difference in toddler behavior directed to caregiver: FDC subjects rated higher in verbal (conversational) behavior. Similarities exceeded differences. Caregiver behavior similar in both settings, except FDC caregivers were more restrictive and negative. FDC groups were smaller, heterogeneous. Staff/child ratios were similar. FDC caregivers did more housework during caregiving hours, were more isolated from other adults and worked longer hours. CDC caregivers had more formal training but less experience as mothers. CDC facilities had more large, nonportable play objects.	Day care facilities were community based. Within groups comparisons on quality factors were nor reported. Time in day care ranged from 4 to 17 mos. Authors point out that greater frequency of toddler talk to peers in FDC group might have been a function of the presence of older children in FDC settings.
11. Portnoy & Simons (1978)	35 Total - (3½ - 4 yrs.) 12 CDC 11 FDC 12 NDC	Mother-child attachment behavior	No significant differences in attachment behavior between groups.	Centers were reported as reflecting a wide variety of sponsorship, program, and child/staff ratio. No information on family day care homes. The Ainsworth Strange situation used to measure attachment behavior has been questioned (Farber & Edgeland) as a valid procedure for use beyond the age of 18 mos.

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12. Prescott (1978) (See also Prescott 1973 and Prescott & Jones, 1967)	112 Total - (2 to 5 yrs.) 84 CDC 14 FDC 14 Mixed (own home & part-time nursery school)	Environmental characteristics and experiences: Initiation and termination of activity segments Group size and age composition Caregiver-child interactions Materials and equipment	FDC and mixed groups had highest frequency of following: child initiated attention to adults, adult facilitation, incidences of children receiving help, thrusting behaviors (physical activity, playful intrusion, help seeking, etc.), access to privacy, "soft" materials and equipment (pillows, carpets, laps, etc.), exposure to visitors, heterogenous age grouping. FDC and mixed groups were lowest in: adult controlled activities, time spent in transition, emphasis on rules, categories of distress (frustration, rejection, and tentative behavior), and group size. Overall conclusions: FDC is superior to CDC in providing a homelike, and therefore more favorable environment for child care.	Centers had "reputation for good quality care, day care homes were participating in a demonstration family day care project, and therefore above average in quality. Conclusions about FDC environments are probably not generalizable to typical FDC settings.
13. Steinberg & Green (1979)	109 Total (Mothers of children 2 - 3½ yrs.) 52 using CDC 38 using FDC 19 using home care (babysitter)	Effects of day care on parents: Education for child-rearing Parent-child relationship Satisfaction with care-giving arrangement	CDC mothers reported: becoming more knowledgeable as parents, feeling less harried, finding more joy in parenting, and improvement in parent-child relationships. FDC mothers were happier with discipline provided and childrearing values of the caretaker. In general, utilizing center care appears to have the most positive effect on parents, while using a sitter in the home the least.	Quality of day care facilities was not compared. Parents experienced only one type of care.
14. Schiller (1980)	90 Total - (3 - 5 yrs.) 39 CDC 26 FDC 25 Mixed (½ day preschool & home)	Ego-resiliency and ego-control	No differences were found between FDC and CDC groups on ego functioning. (Mixed group comparison was not reported). See Schiller, p. 78 (62) for other findings on sex, age of entry, length of care, etc.	Centers were privately operated, apparently of good quality. Information on variation in characteristics was included. Information on day care homes was not reported Interobserver (teacher ratings) reliability ratings were relatively low but were supported by parent-attitude data.

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15. Tyler & Dittman (1980)	25 Total (Average age = 18 mos.) 10 CDC 15 Home care (12 FDC & 3 NDC)	Caregiver-child interactions	More verbal exchanges were observed among caregivers and toddlers in home settings. Children in home care expressed more emotionality and fewer self-comforting habits (thumbsucking, etc.) than CDC children. However, authors concluded that neither setting provided optimal care to meet toddler's growing need for independence and stimulation.	FDC subjects were grouped with NDC for comparisons with CDC groups. Since there were only 3 NDC subjects included, the study is presented here in the interest of a comprehensive literature review. Information on other indicators of quality was not reported.
16. McCartney, et al (1982)	156 Total - (36 - 60 mos.) Enrolled in various forms of day care (FDC, CDC, sitter) for 6 months or more. (FDC and CDC group sizes not reported)	Intellectual, language emotional and social development	Children enrolled in CDC as infants were rated as more emotionally maladjusted than children cared for by sitters or in FDC as infants and who began center care at later ages. No differences were found between CDC and FDC subjects on intellectual, language or social development, except children enrolled in good quality CDC care in early infancy scored higher on language and intellectual development.	Information on data analysis for CDC and FDC group comparisons was not presented. Study was conducted from a retrospective approach using facilities in Bermuda.

Ecological comparisons tend to favor FDC, especially in relation to the individualized attention provided. However, quality variations within day care settings are more important than the type of care. A good day care center is preferable to a poor day care home and vice versa. As long as qualitative variations are considered, both forms of care should be viewed as appropriate options, each with its peculiar strengths and weaknesses.

Summary of Day Care Effects

Infants and young children who attend good quality day care programs do not differ markedly from their home reared peers on most characteristics of development. Children from impoverished backgrounds may benefit cognitively and physically from participation in an enriched day care program. In addition, some children may obtain social skills from day care experience. On the other hand, day care children tend to be at greater risk for contacting communicable diseases and becoming more aggressive. While ecological comparisons tend to favor family day care over center day care, the limited evidence currently available indicates that the two types of care do not consistently result in different developmental outcomes. Overall, the weight of the evidence to date does not contraindicate the participation of infants and young children in good quality day care in either centers or day care homes.

The most critical variable in considering the impact of day care is quality. With few exceptions, the research reports (e.g. 20, 37, 43, 45) which have revealed negative effects associated with day care have been conducted in facilities where the quality of the program was unknown or questionable. A study recently conducted in Bermuda (42) compared the effects of day care programs of varying quality. Children attending better quality scored higher on measures of language, social and emotional development. Effects of day care are thus likely to be situational, and vary according to the quality of the program. Consequently, the identification of criteria for determining quality in day care is important.

Components of Quality Day Care

In recent years, researchers have identified many of the critical factors associated with quality day care, especially for preschool age children. There is general agreement that group size, child/staff ratio, caregiver qualifications and continuity, curriculum, space, materials and equipment, and parent involvement are factors which should be examined in assessing the quality of day care environments. While the research is still not completely definitive, it is important to summarize the key findings which provide a basis for determining specific standards within each of the components of quality.

Group-size

The NCDS (60) concluded that the most important factor in determining the quality of center day care for preschool age children is

group size. Smaller groups were consistently associated with better care, more socially active children and higher gains on two developmental tests. The researchers concluded that for preschool age (3 - 5) children, the size of each group should not exceed a total of 18 children, based on average attendance. For children under three years of age, no specific group size limits were recommended, although the report stated that group size for infants and toddlers should be smaller than preschool groups. The National Day Care Home Study (22) concluded that family day care homes should be limited to "approximately six children (depending on age mix) p. 127."

Child/Staff Ratio

Through the years, child/staff ratio has been considered to be the leading indicator of quality in day care. However, the NCDS concluded that, independent of class size, child/staff ratio is less important than had previously been assumed. Group size and child/staff ratios were found to be closely related and should be considered together in measuring day care quality. For infants, however, child/staff ratio is much more strongly related to day care outcomes than for preschoolers. The NCDS indicated that child/staff ratios could be set as high as 9 to 1 for preschool groups (attendance) without sacrificing quality as long as group size was no larger than 18. For infants, the maximum caregiver/child ratio was 4 to 1. Other researchers (35) recommend that one caregiver should not be responsible for more than three infants.

Caregiver Qualifications

A third major factor in assessing quality care is the qualifications of the day care staff. The NCDS found that staff members with education or training relevant to young children deliver better care with somewhat superior developmental effects for children. The National Home Day Care Study (22) reported a similar finding.

Effective interpersonal skills along with commitment and concern for children and their families have also been identified as important caregiver qualifications (6). A list of characteristics of competent infant caregivers delineated from the research on mother-infant interaction is available in Jacobson (33).

Caregiver Continuity

Continuity and stability of caregiving arrangements, both between and within caregiving arrangements, have been considered as the sine qua non of quality care (6). While conventional wisdom and much of the research evidence tends to support this conclusion, not all studies have found negative consequences associated with caregiver discontinuity (e.g. 17, 62). The child's family situation is an important qualifying variable. Continuity of care is apparently more important for children from broken families than it is for children from intact families (6, 20). For children from stable family backgrounds, development is not necessarily threatened by changing child caregivers and child care arrangements (14).

Daily Program

The educational program or curriculum is clearly one of the critical factors in distinguishing qualitative features of day care facilities. Research studies have found that any educational program is better for children's learning and development than no educational program at all (14). Curriculum is important for family day care homes as well as centers. Researchers (26) compared the effects of three different educational programs on the cognitive development of preschool age children in family day care homes. All three programs were successful in enhancing development. Also, family day care children who received one of the programs had higher scores than family day care, as well as center day care children, who were not in a program with a clearly identifiable educational curriculum.

Numerous curriculum models and program approaches are available for use with infants and young children. Prescott (52, 53, 54) differentiated between day care programs on the basis of whether they follow an open or closed structure. Programs where teachers are very controlling, initiate and choose most of the activities are called "closed structures". Those in which teachers are unintrusive and allow children to make most of the choices of activities are labeled "open structures". These two types have been found to occur with about equal frequency, but most day care programs fall somewhere in between these two extremes and are referred to as "moderately" structured (14).

Clarke-Stewart (14) reviewed a number of studies which compared curriculum models based upon closed, moderate and open structures. In closed programs, children show less independence, initiative and imagination, but do better on intelligence and achievement. Children in open programs are more independent, persistent and do better on tests of creativity, inventiveness and problem solving. Children in moderately structured programs seem to have the best of both worlds, demonstrating gains in creativity and self-esteem as well as cognition and achievement.

Physical Environment

The human environment is usually considered to be a more potent influence on children than the physical environment (60), but the physical environment is an extremely important factor in the overall quality of the day care environment. The amount of space available in combination with how it is equipped and arranged are factors which influence human interactions.

Space. Phyfe-Perkins (46) reviewed the research literature on the relationship between the physical environment and children's behavior in preschool programs. With one exception, the studies show that the level of social interaction, including aggression, increases as space decreases. Crowdedness is thus a factor which contributes to negative behavior, physical and psychological discomfort and less than optimum development.

Recommendations on the amount of square feet per child which should be provided in day care settings vary. On the basis of their experience with a model research day care center for infants, Kagan, et al (35)

recommend a minimum of 100 square feet per child. Following a review of research studies, Clarke-Stewart (14) recommends a minimum of 25 square feet per child. Presumably, these recommendations pertain to indoor space. Preschool education texts (e.g. 29) typically recommend 75 to 200 square feet of outdoor space per child, although the basis for that recommendation is not usually specified.

The NCDS found no relationship between the amount of space and gains on preschool tests. Slight relationships were discovered between amount of space and some child behaviors. All of the centers met or exceeded minimum space required by local regulations (not specified). Licensing standards in the United States usually require a minimum of 35 square feet per child which is apparently adequate (14).

Prescott (52) found that the overall size of a center, based on enrollment, was directly related to program quality. Smaller size centers, between 30 and 60 children, tended to be highest in quality. In centers with over 60 children, quality declined even when space and staff quality were high. As centers increased in size, they became more sterile and impersonal.

Arrangement, equipment and materials. The way in which space is equipped and organized may be more important than the amount of space, once minimum requirements are met. The physical environment is typically correlated with the curriculum model and program format so recommendations vary accordingly. Prescott (53) believes that the best physical settings for day care are those which match the environment of the home as closely as possible. Others (14, 46) similarly recommend a spatial organization that provides for privacy and quiet and the separation of messy and neat, loud and quiet activities.

Ecological studies consistently support the idea that the materials and equipment provided children strongly influence their behaviors (46). An environment that is low in density of children and high in easily accessible resources is considered optimal for the preschool age child (6, 54). The most important recommendations which have been drawn from research studies appear to be that a variety of equipment and materials designed for a balance of activities in each area of development be available in sufficient quantities to allow choices and avoid unnecessary competition.

Parent Involvement

Conventional wisdom is supported by research in the conclusion that quality day care programs for children need to include parent involvement and participation as a major component. Evidence from Head Start and other programs (72) reveals that the more parents are involved in the activities of childrens' programs, the more children benefit.

Day care facilities vary in the extent to which they welcome parental involvement, just as parents vary in the extent to which they are motivated to be involved. Zigler and Turner (72) found that the average amount of time spent by parents in a center which encouraged parental

involvement was 7.4 minutes per day. Powell (49, 50) found that most of the parent-caregiver contacts occur at "transition points" when children arrive and depart. (See references 49, 50, 72 for a discussion of the variables associated with parent participation.) Regardless of the amount of interest parents express, a day care facility which does not actively seek to involve parents is missing an important component of quality care.

Implications of Day Care Research

Research studies on day care are contradictory and inadequate in many respects. However, there are a number of consistent trends in the findings which provide the basis for some practical advice for parents, caregivers, administrators, policymakers and researchers. The following is a list of suggestions which has been extracted from various studies and research reviews.

Implications for Caregivers and Administrators

1. Caregivers should take extra precautions in sanitation and personal hygiene to minimize the spread of communicable diseases. A list of recommendations for controlling communicable diseases in day care facilities is attached in Appendix A.

2. Day care programs should provide opportunities for the development of prosocial skills, including specific curriculum activities and environmental management to counteract aggressive tendencies which some children may acquire. (See Finkelstein (21) for suggestions).

3. Frequent verbal interactions with children in day care, including infants, on a one-to-one basis is extremely important. Special care should be exercised to avoid overlooking children who are shy and withdrawn. (35).

4. Day care center environments should be made as homelike as possible (52, 53). Center day care and family day care should include the best of both worlds. Family day care should incorporate curriculum ideas from center day care, while center day care should incorporate some of the softness and "homeiness" of family day care.

5. Caregivers should make a special effort to communicate with parents and involve them in the program as much as possible.

6. Administrators should hire staff with education and training relevant to child development and day care, and who have personal qualities consistent with good child rearing practices. Caregivers should be placed in day care settings where their cultural and social values are similar to those of the families served.

7. Caregivers should be compensated for lost time due to day care related illnesses.

8. Day care programs should have a clearly identifiable curriculum which parents can consider in choosing care to match their needs and expectations.

Implications for Parents

1. Although day care has not been given a clean bill of health, parents may utilize good quality day care with some degree of assurance that the effects will be relatively benign at worst and slightly enriching at best. Parents should be prepared to accept an increased risk of exposure to contagious diseases, and the possibility of increased negative interactions of their child with peers. The risks associated with average to poor day care are unknown.

2. Center day care and family day care are both viable options for child care. A good day care center would be preferable to a poor day care home and vice versa. Given a choice between a good day care center and a good day care home, the day care home would most likely be preferable, especially for infants. Variations in the quality of both homes and centers make it especially important for parents to examine specific situations carefully before making child care placement decisions.

3. Child care arrangements should be consistent and stable within quality settings. Stability and continuity of caregivers is especially important for children from broken homes.

4. In shopping for child care arrangements, parents should look for: (A) homes or centers which are licensed and supported by a sponsoring agency, and have external resources such as training and consultants; (B) small centers (less than 60) and facilities which serve children in small groups with a favorable staff/child ratio, and which have caregivers with education/training relevant to young children; and (C) facilities which welcome parent participation.

5. If possible, parents who need day care services should place their child in care between one and seven months of age, or wait until after 15 to 18 months of age to avoid the peak age for separation anxiety (35).

Implications for Social Policy/Legislation

1. Child care regulations in most states need to be changed to reflect the research findings on good quality care for infants and children, especially in relation to group size, staff/child ratio and caregiver qualifications.

2. Training, nutrition, health and other support services need to be made available to day care providers, including family day care homes.

3. A number of substantive articles on political and social policy issues in day care are available in Zigler and Gordon (see reference no. 72).

Implications for Researchers

1. Currently the most pressing need in day care research is for carefully designed studies to assess the consequences of "garden variety" day care of average quality utilized by most families. In addition, studies are needed to assess (A) the long term effects of day care, (B) the differential effects of different types of care, (C) effects of day care on physical growth and development, including health, safety and nutrition, and (D) the impact of day care on parents.

2. Belsky and Steinberg (5) have suggested that future day care research should be conducted within an ecological framework, utilizing Bronfenbrenner's model of the ecology of human development. (See Belsky (4) for specific suggestions).

3. Future day care research investigations need to be carefully designed to avoid the methodological pitfalls of previous studies. For a discussion of the major methodological issues and concerns, see Frye (23) and Seitz (65).

4. In addition, future day care researchers need to fine tune measurements of dependent variables and move away from global to more specific measures of functioning.

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Appendix A

Recommendations For Controlling Communicable Diseases in Day Care Facilities*

1. All staff members and children should wash their hands thoroughly after any toilet/diaper related activity.

2. Post established procedures for diapering, such as: Disinfect table surfaces which are touched during diapering.

3. An adequate number of sinks, toilets and areas for changing diapers should be provided. The diaper areas should be close to a sink for immediate handwashing. Food preparation and eating areas should be separate from diapering areas.

4. Stepstools and toilet seat adapters are more sanitary for young children than potty chairs.

5. When possible, separate children in diapers form older toilet trained children.

6. Caregivers should supervise young children in their use of toileting and handwashing procedures to follow through with sanitation procedures.

7. Two or more cases diarrhea within a 48-hour period in a day care facility constitutes an outbreak, and requires that steps be taken to prevent further spread:
   A. The facility director should confer with a physician or the local public health department for specific advice.
   B. Children with diarrhea should be excluded form the facility until the symptoms disappear and stool cultures are negative.
   C. No new children should be admitted until the outbreak is over.
   D. Day care facilities are usually advised to remain open during an outbreak of diarrhea. If the facility closes, the children may be enrolled in other facilities and spread the infection.
   E. In facilities with high rates of infections, grouping the infected children may be more practical than exclusion.

8. When a case of hepatitis A occurs in a child, a staff member, or in the household of two or more facility participants, it is advisable to contact a physician about the possibility of giving immune globulin to all day care center staff and children, including new admissions through a six week period following the last case.

9. The following guidelines for exclusion of children with respiratory tract infections are recommended:
   A. Children with upper respiratory infections (colds, runny noses, etc.) who do not have fevers need not be excluded.
   B. Children receiving antibiotics who are not feverish and are otherwise well may attend.

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*Compiled by Charles W. Snow, Department of Child Development and Family Relations, East Carolina University from: Kendall, E.R. Child care and diseases: What is the link? Young Children, 1983, 38(5), 68-77, and Trumpp, C.E. and Karasic, R. Management of communicable diseases in day care centers. Pediatric Anals, 1983, 12, 219-229.

C. High or persistent fevers should receive medical evaluation, but fever alone is not an absolute reason to exclude children from day care. The advice of the physician should be followed.
D. Children with known or suspected measles, mumps, rubella, or varicella (chicken pox) should be excluded until they are no longer contagious.
E. Generally, any child who is too ill to follow the normal schedule of activities should be excluded, unless the center is specifically equipped to care for sick children.

10. Ideally each day care center should have a medical advisor or consultant to assist in the formulation of policies for the exclusion and care of sick children and to call when specific questions arise.

11. All caregivers in day care centers should have training in basic health practices.